Determining The Occurrence of Life Outside Earth!

1. The Drake Equation:

Website: **https://www.brainpop.com/games/drakeequation/index.weml**

Record the affect your answers have in the table below:

Questions	Your Choice	What answer most people have agreed with	The Actual Number that you have determined thus far	How did you compare with others who answered?
Stars – What % of the stars in the Milky Way have planets?				
Planets – How many planets/ stars are habitable? (They are Goldilocks planets)				
Life- On what % of habitable planets does life evolve?				
Intelligent-On what % of life on planets with life does intelligent life evolve?				
Lifetime- How long does intelligent life exist on a planet?				
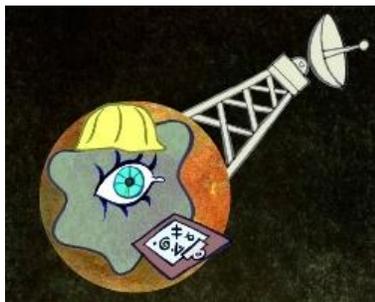
2. Saeger's Equation:

N = N*$F_Q$$F_{HZ}$$F_o$$F_L$$F_S$

where: N = the number of planets with detectable signs of life

N* = the number of stars observed (Astronomers estimate that the observable universe has more than 100 billion galaxies. Our own Milky Way is home to around 300 billion stars)

F_Q = the fraction of stars that are quiet (mellowed from violent star characteristics)

F_{HZ} = the fraction of stars with rocky planets in the habitable zone (physical support can be given to life)

F_o = the fraction of those planets that can be observed

F_L = the fraction that have life

F_S = the fraction on which life produces a detectable signature gas (methane and other carbon-containing molecules that might be present in the atmosphere)

Record the affect your answers will have on the table below:

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Questions	Your Choice	The Actual Number that you have determined thus far
Stars- the number observed		
Quiet Stars– The % of those stars that are not exploding/colliding		
Rocky Planets- The % of those stars that would have rocky planets in the habitable zone.		
Observable-The % of those planets that can be observed by Earthlings		
Life- The % of planets that have life		
Biogas- The % of planets that produce a biological signature gas		

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3. **Which method of estimating the possibility of life on exoplanets would you support and why?**

4. **Imagine that the Voyager spacecraft may sail through interstellar space until the Golden Record is no longer intact - the estimate is it would last for about one billion years. Discuss your thoughts on the possibility that Voyager might one day be detected or happen upon a life form.**